



Spending concentration as a proxy indicator in an evaluation perspective

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Revenue share of problem gamblers in general

Study	Country	Revenue share of problem gamblers
Productivity Commission 2010	Australia	40% ^a
Williams & Wood 2007	Canada	35%
Williams & Wood 2004	Canada	23% ^b (32% ^c)
Hayward 2004	Canada	40%
Abbott & Volberg 2000	New Zealand	19%
Gerstein et al. 1999	USA	15%
Productivity Commission 1999	Australia	33%
Lesieur 1998	USA & Canada	30%
Volberg & Vales 1998	Porto Rico	65%
Volberg et al. 2001	USA	14% to 27%
Grinols & Omorov 1996	USA	52% ^d
Dickerson et al. 1996	Australia	26%

^a Derived from seven regional studies

^b Weighted by provinces

^c Weighted by population

^d Casinos



Spending of non-problem and problem gamblers

Group	France			Québec			Germany		
	n	Avg.	Median	n	Avg.	Median	n	Avg.	Median
Non-problem gamblers ^a	8,360	€430	€80	7,367	\$492	\$140	2,788	€132	€17
Problematic gamblers ^b	339	€4,200	€760	124	\$3,653	\$1,560	86	€253	€49
Pathological gamblers ^c	75	€13,424	€6,000	38	\$23,928	\$6,420	49	€3,100	€198

^a PGSI 0-2 or DSM-IV 0-2

^b PGSI 3-7 or DSM-IV 3-4

^c PGSI > 7 or DSM-IV > 4



Prevalence, revenue share & excess spending

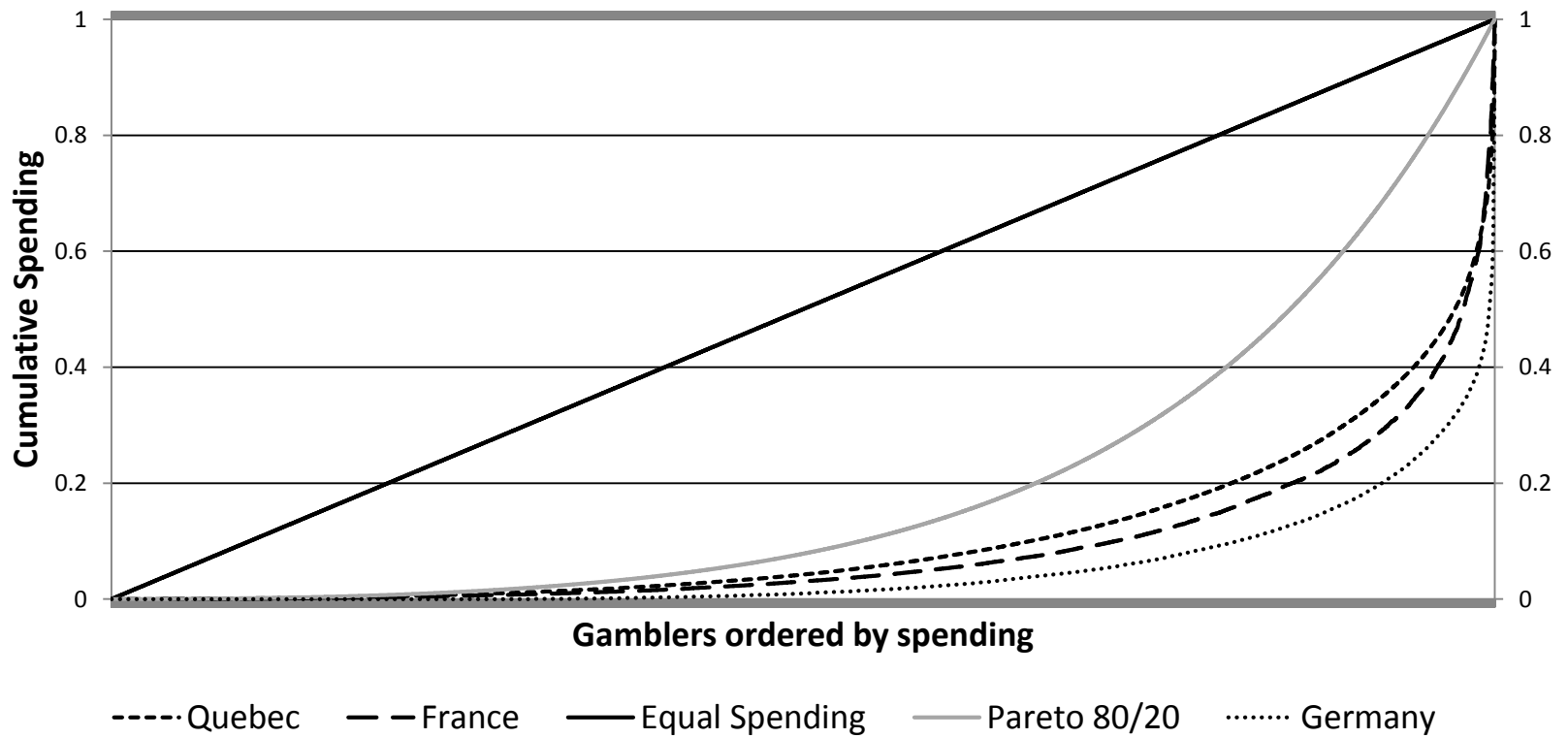
Group	France			Québec			Germany		
	Prevalence	Spending share	Excess spending	Prevalence	Spending share	Excess spending	Prevalence	Spending share	Excess spending
Non-problem gamblers^a	95.3%	59.7%	-35.4%	97.3%	69.4%	-27.9%	95.4%	68.0%	-27.4%
Problematic gamblers^b	3.9%	23.6%	19.7%	2.1%	10.8%	8.7%	2.9%	4.0%	1.1%
Pathological gamblers^c	0.9%	16.6%	15.7%	0.6%	19.8%	19.2%	1.7%	28.0%	26.3%

^a PGSI 0-2 or DSM 0-2

^b PGSI 3-7 or DSM 3-4

^c PGSI > 7 or DSM >4

Distribution of gambling spending





Three hypotheses

- H1: A positive correlation exists between the concentration of revenues and the prevalence of gambling problems.
- H2: A positive correlation exists between the concentration of revenues and the share of revenues derived by problem gamblers.
- H3: A positive correlation exists between the concentration of revenues and excess spending by problem gamblers.



Gini coefficient

GINI coefficient can be estimated as

$$G = 1 - \sum_{i=0}^{n-1} (F_{i+1} - F_i)(\Phi_{i+1} - \Phi_i)$$

- $f(x)$ is the proportion of the population with spending of x ,
- $F(x) = \int_{x_0}^{\bar{x}} f(y)dy$ represents the cumulative proportion of the population with spending of x ,
- $\Phi_i = \frac{1}{\mu} \int_{x_0}^{\bar{x}} yf(y)dy$ represents the cumulative share in total spending.
- $0 < G < 1$, the higher the GINI coefficient, the more unequal a distribution.

Prevalence, Revenue share, excess spending, GINI per game form

Type of game	France					Québec				
	n	Prevalence PGSI \geq 3	Revenue share PGSI \geq 3	Excess Spending	GINI all players	n	Prevalence PGSI \geq 3	Revenue share PGSI \geq 3	Excess Spending	GINI all players
Sports betting	567	19.2%	58.5%	39.3%	82.8%	226	8.0%	16.0%	8.0%	82.1%
Poker	376	18.6%	63.3%	44.7%	85.4%	412	8.0%	43.6%	35.6%	86.4%
Table games (w/o poker)	296	15.9%	76.1%	60.2%	85.0%	245	8.3%	44.1%	35.8%	88.7%
Horseracing^b	872	12.1%	40.2%	28.1%	84.7%	41	-	-	-	-
Slot machines	897	9.9%	41.0%	31.1%	87.6%	999	8.7%	76.3%	67.6%	92.8%
Scratch cards^a	4,887	5.3%	26.1%	20.8%	79.5%	-	-	-	-	-
Lotteries	6,384	4.7%	24.2%	19.5%	78.6%	7,360	2.7%	10.5%	7.8%	67.6%
All gambling	8,794	4.8%	40.2%	35.4%	83.9%	7,529	2.7%	30.6%	27.9%	80.2%

^a The Québec data set does not include information on scratch cards.

^b Information for horseracing omitted in Québec, because $n=6$ for PGSI \geq 3.



Results

1. Strong and significant correlation when combining the results from both surveys ($r = .714$, $n = 12$, $p = .006$) **supporting hypothesis H3**
2. Significant positive correlation between the GINI coefficient and the revenue share from problem gamblers ($r = .728$, $n = 12$, $p = .005$) **supporting hypothesis H2**
3. No significant correlation between the GINI coefficient and the prevalence of problem gambling and thus **no evidence supporting hypothesis H1**.



Interpretation

- Concentration of gambling spending is partly caused by problem gambling
 - The GINI coefficient is a proxy of problem gambling
 - In electronic gambling forms the GINI coefficient can be calculated automatically and in real time
- **The GINI coefficient seems to be a good indicator for policy makers to evaluate the addictive potential of specific game forms and even operators.**



Thank you for your kind attention!

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